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bronze is applied on the raised parts, so as to give them somewhat of the appearance of real bronze. But the most carefully applied paint will always more or less destroy the sharpness and distinctness of the forms, will impair the beauty of the cast, and never obtain the peculiar lustre of the real metal; besides which ground bronze is little durable, as it will in a short time get rusty, especially in the open air, and thus entirely lose its metallic gloss.

As the best way of meeting these difficulties, it has frequently been attempted to coat the surface of the cast-iron with real metal by the galvanic process, but it was soon found that this could not be done in the same simple and easy manner as with other metals, and that no intimate combination of the two different metals was possible, probably on account of the great quantity of carbon contained in the cast-iron. A rather successful galvanising process on a large scale was effected on the gas candelabra of the city of Paris, but even in these, when damaged, the coating of copper would come off the surface of the cast-iron like a thin sheet of metal, which circumstance doubtless was the reason why it was laid on to the considerable thickness of nearly half a millimètre.

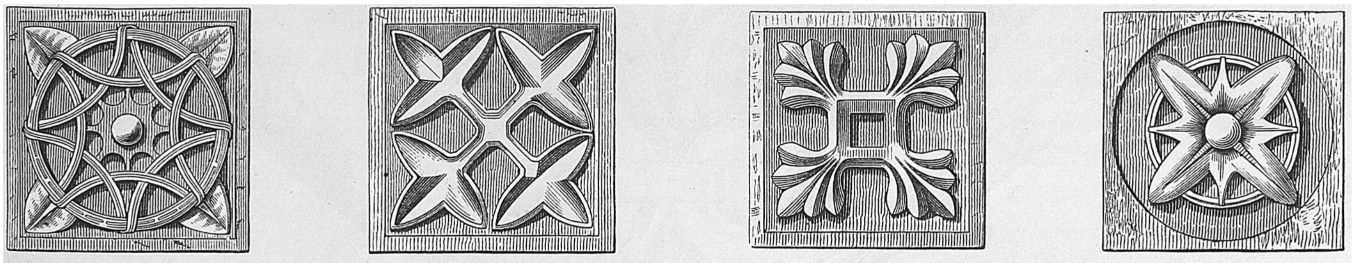
The Paris experiment proves that the galvanic process may be applied to cast-iron notwithstanding the peculiarities we have mentioned, and that it is of practical value. It must however be observed, that it can only be advantageously used for works on which no detached figures, flowers, etc., are afterwards to be mounted, by which process the metal coating might be injured; every such spot would open the door to the destructive influences of rust, and consequently cause the metal layer to peel off.

Should, however, the galvanic process ever be brought to such perfection as to produce an intimate combination of the two metals, so that even a thin coating would possess a certain durability, then there would be gained a method of treatment which would leave nothing more to be desired. Then not only could every kind of coating be applied, but in the gilding or silvering process, the dead and polished parts could be so brought out as to produce the full effect of the nobler metals.

The art of adapting enamels to cast-iron for artistic finish will be probably of very limited application, for it can be used with advantage only on flat surfaces of some extent and on objects which are not exposed to any great variations of temperature. Many attempts have been made to enamel the common iron stoves in general use in German houses, but with no successful result, and so at present it is now only used for domestic iron-ware on account of its suitableness to the object.

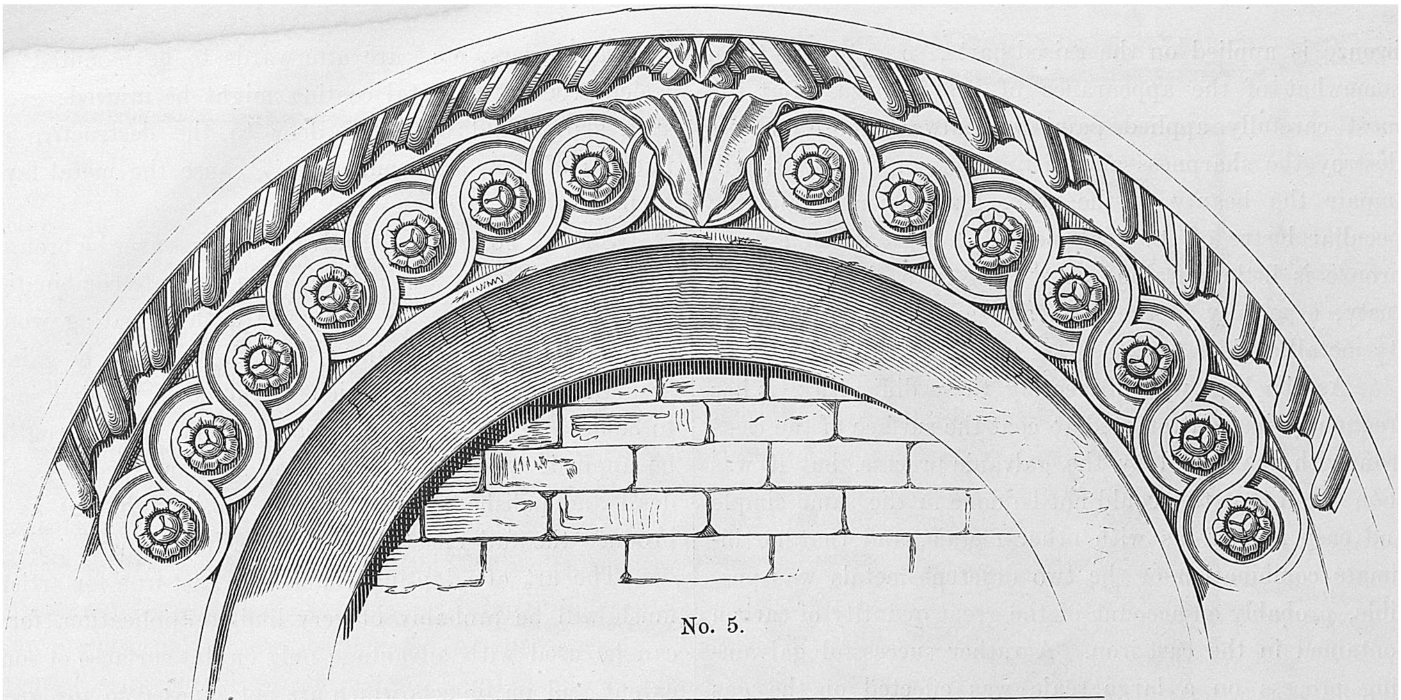
The most appropriate means of finishing off articles in cast-iron is therefore a galvanic coating of some nobler metal, provided that it practically answers the just demand for durability, and that it may also be applied with little difficulty and expense to larger and more complex objects.

SPECIMENS OF ORNAMENTATION.

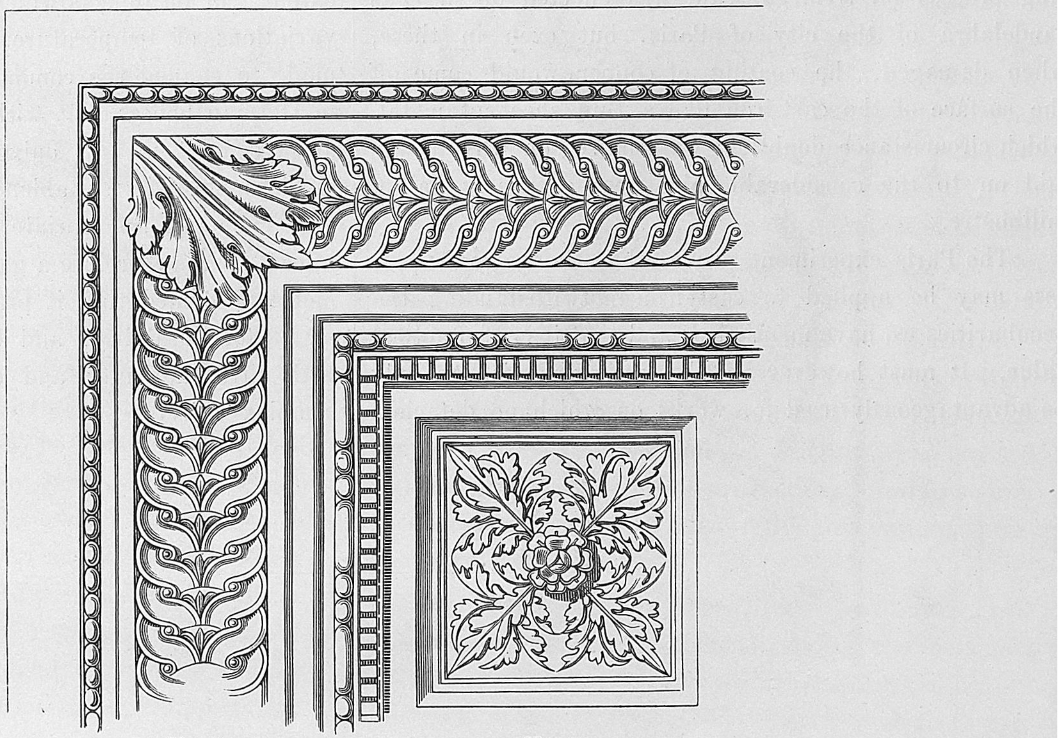


No. 1. No. 2. No. 3. No. 4.

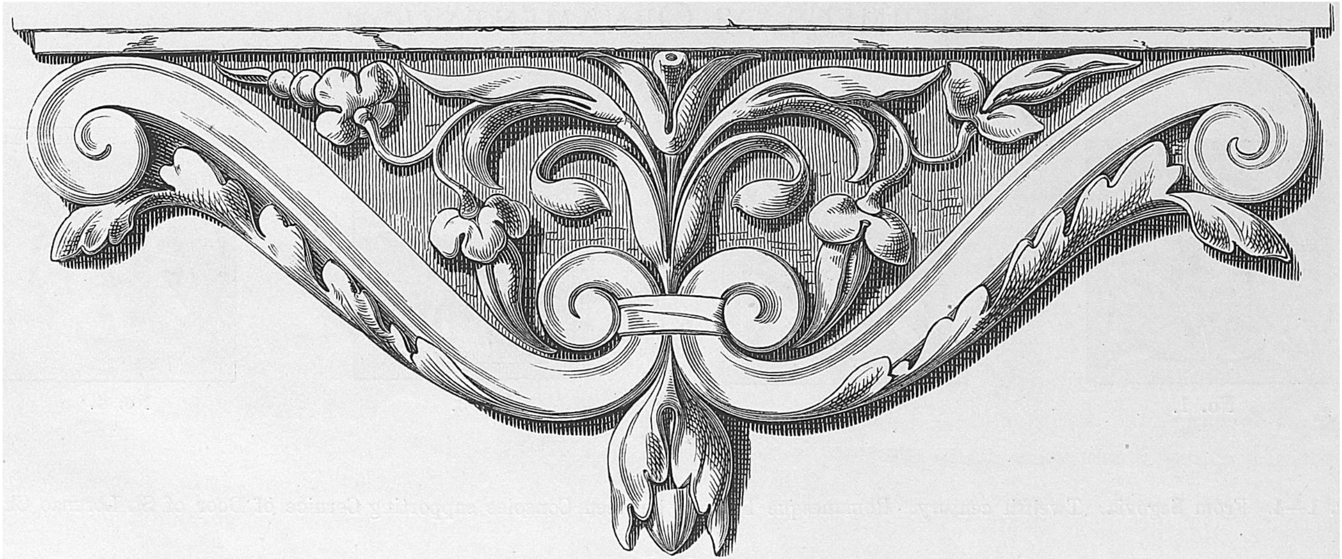
Nos. 1—4. From Segovia. Twelfth century. Romanesque Flowers between Consoles supporting Cornice of Door of St. Lorenzo Church.



No. 5.



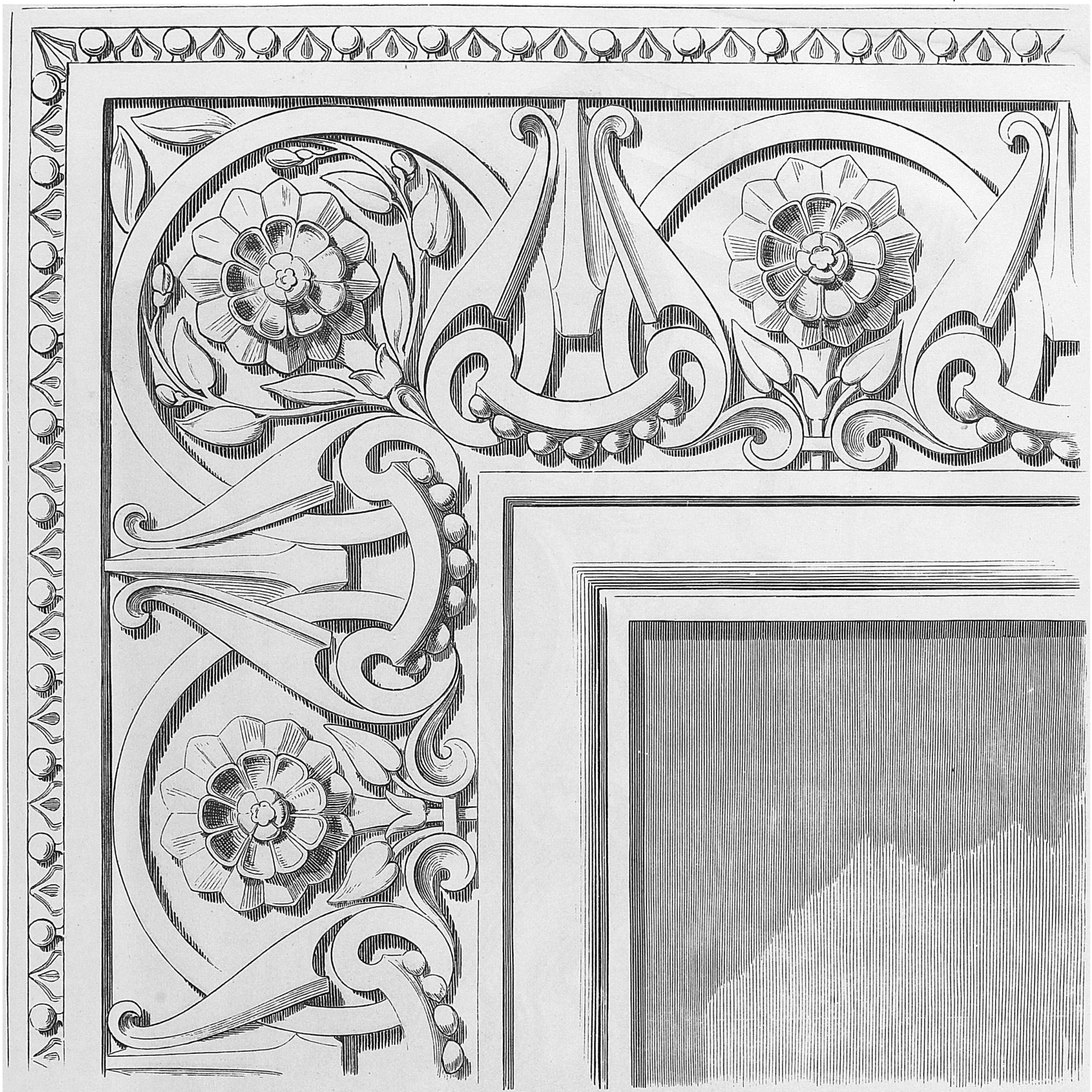
No. 6. No. 7.



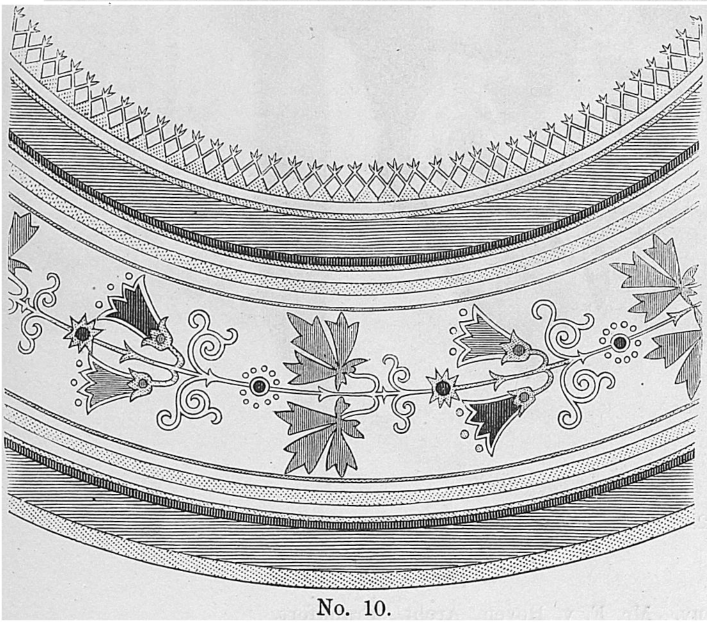
No. 8.

Nos. 5—7. Italian. Sixteenth century. Details of Archivolt, Dressings and Panel of Door of Sa. Madonna di Galliera Church, Bologna. From drawings of M. Angelo Gasparini, Archt.

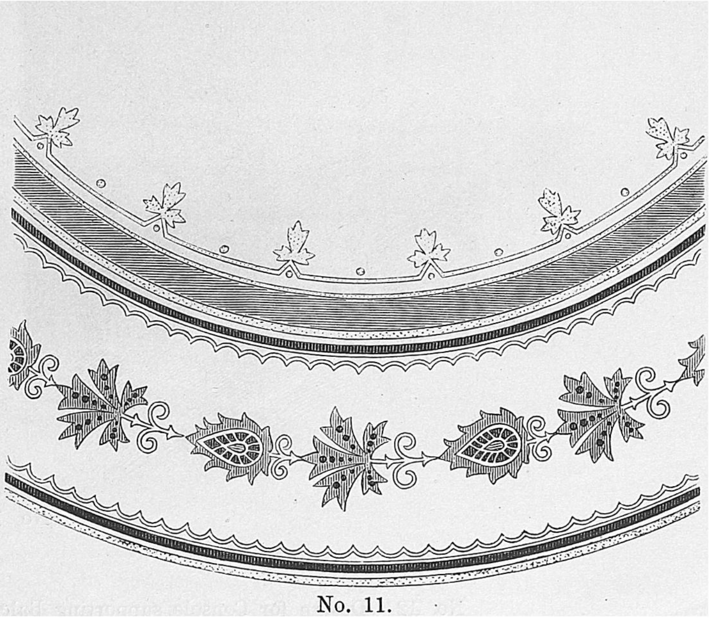
No. 8. Renaissance Console, from Belvedere, Prague.



No. 9.

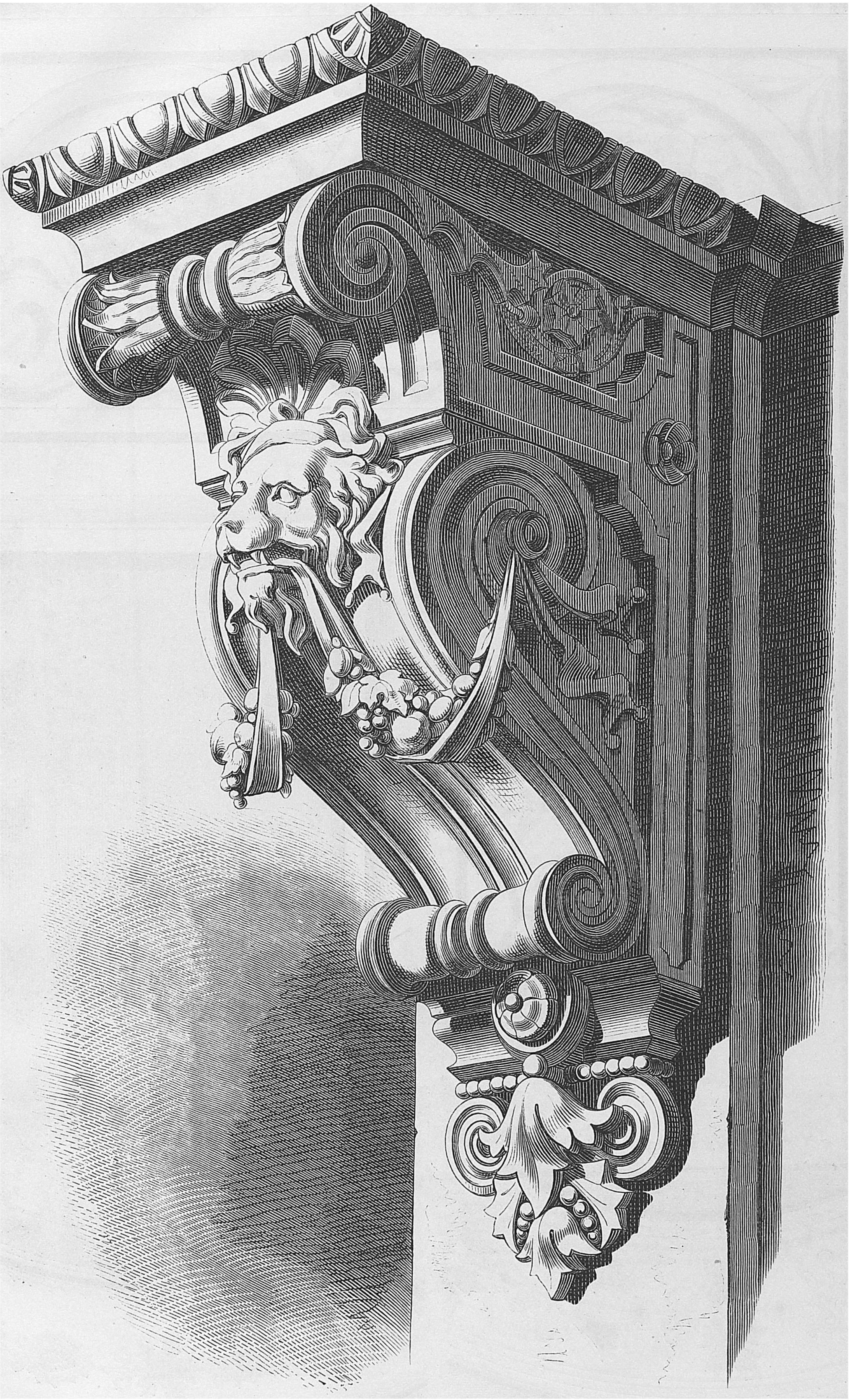


No. 10.



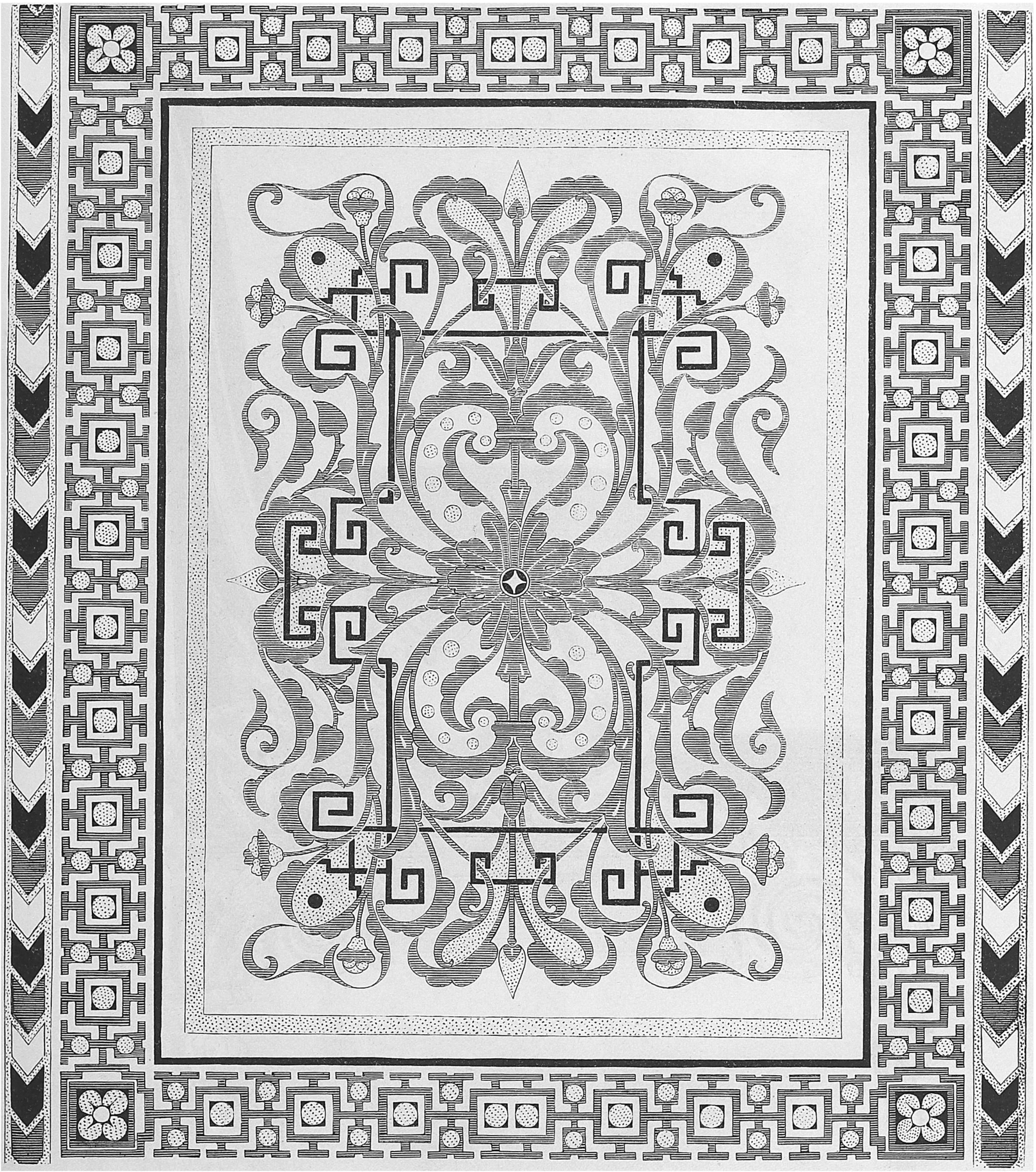
No. 11.

No. 9. Design for Embossed Majolica Border for Wall of Bath room. M. P. Bénard, Archt., Paris,
Nos. 10 and 11. Borders for Porcelain or Glass. Mr. Fr. Fischbach, Vienna.



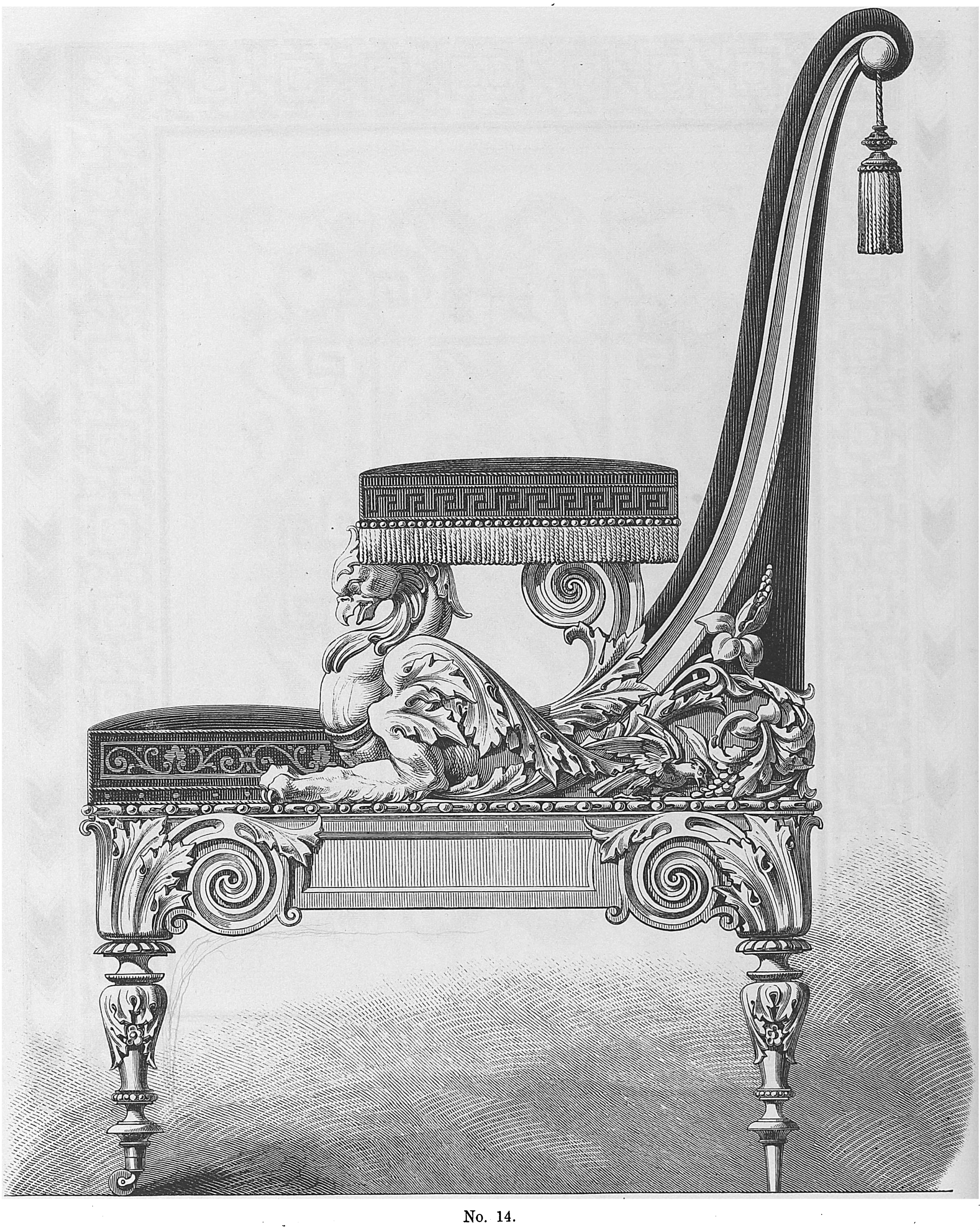
No. 12.

No. 12. Design for Console supporting Balcony. Mr. F. v. Hoven, Archt., Frankfort.



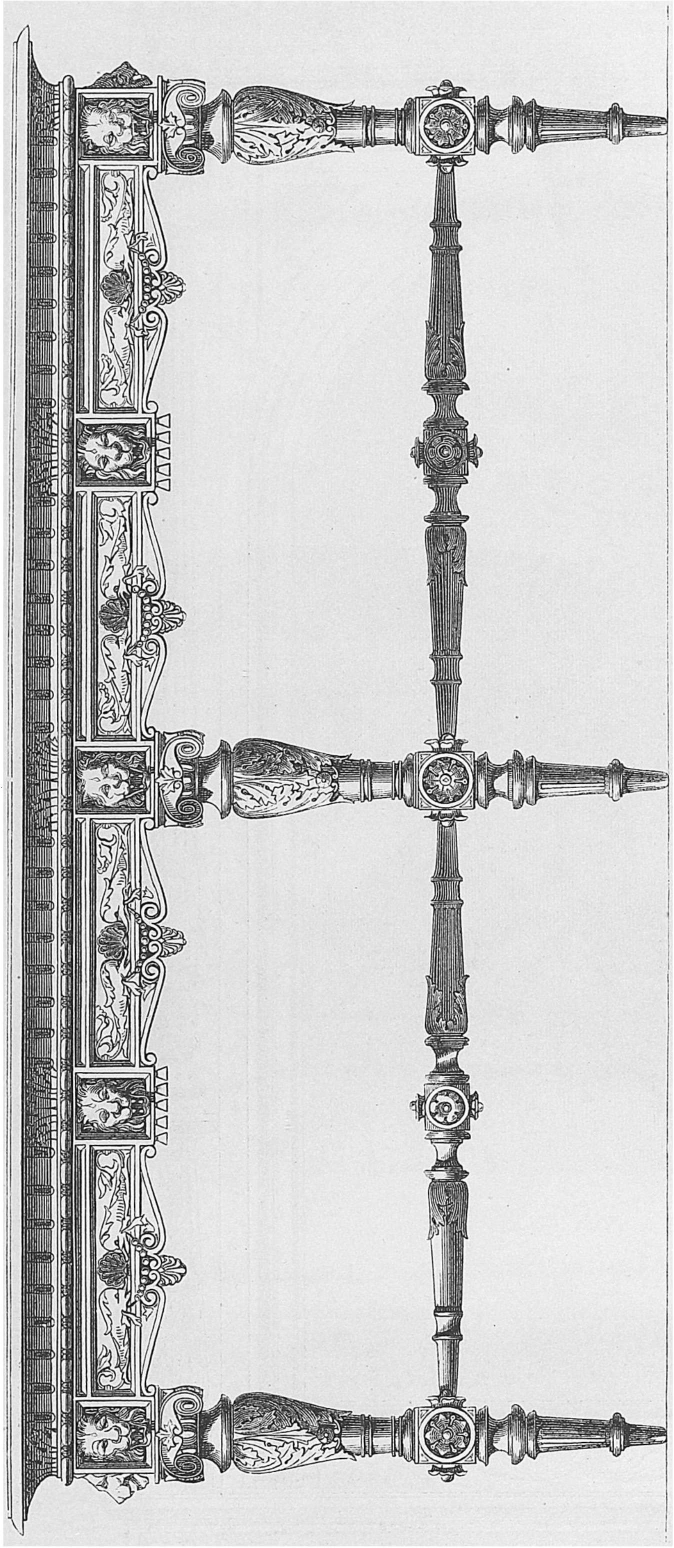
No. 13.

No. 13. Decoration of the Interior of the Viceroy's Carriage by Sir Digby Wyatt, London.
Colors, violet, gold and black.



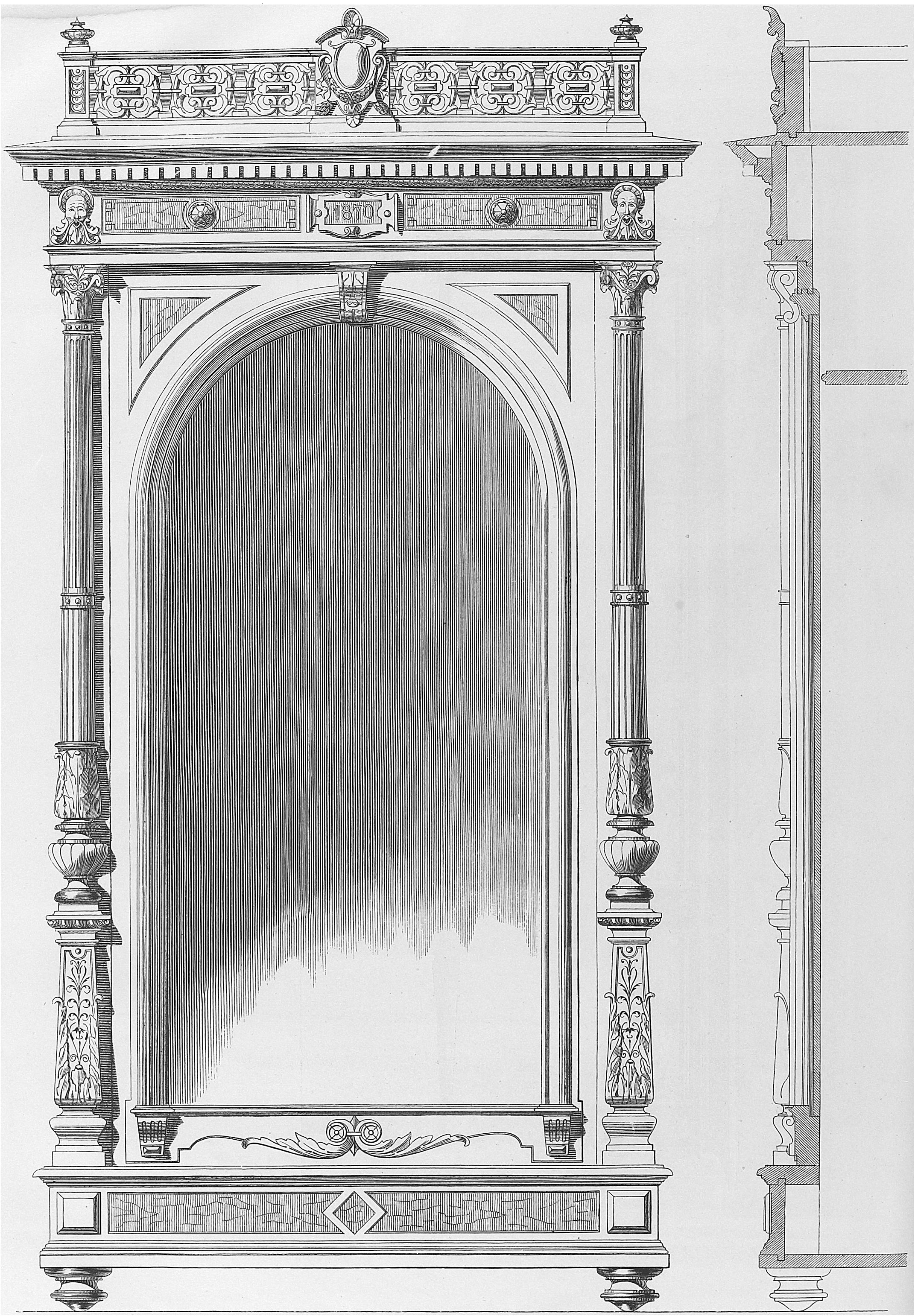
No. 14.

Nos. 14 and 15. Drawing-Room Furniture. (See Parts 6 and 7 of the *"Workshop"*.) Mr. R. Reinhardt, Archt., Stuttgart.
No. 14. Side-Elevation of Sofa.
Details No. 1 of Supplement.

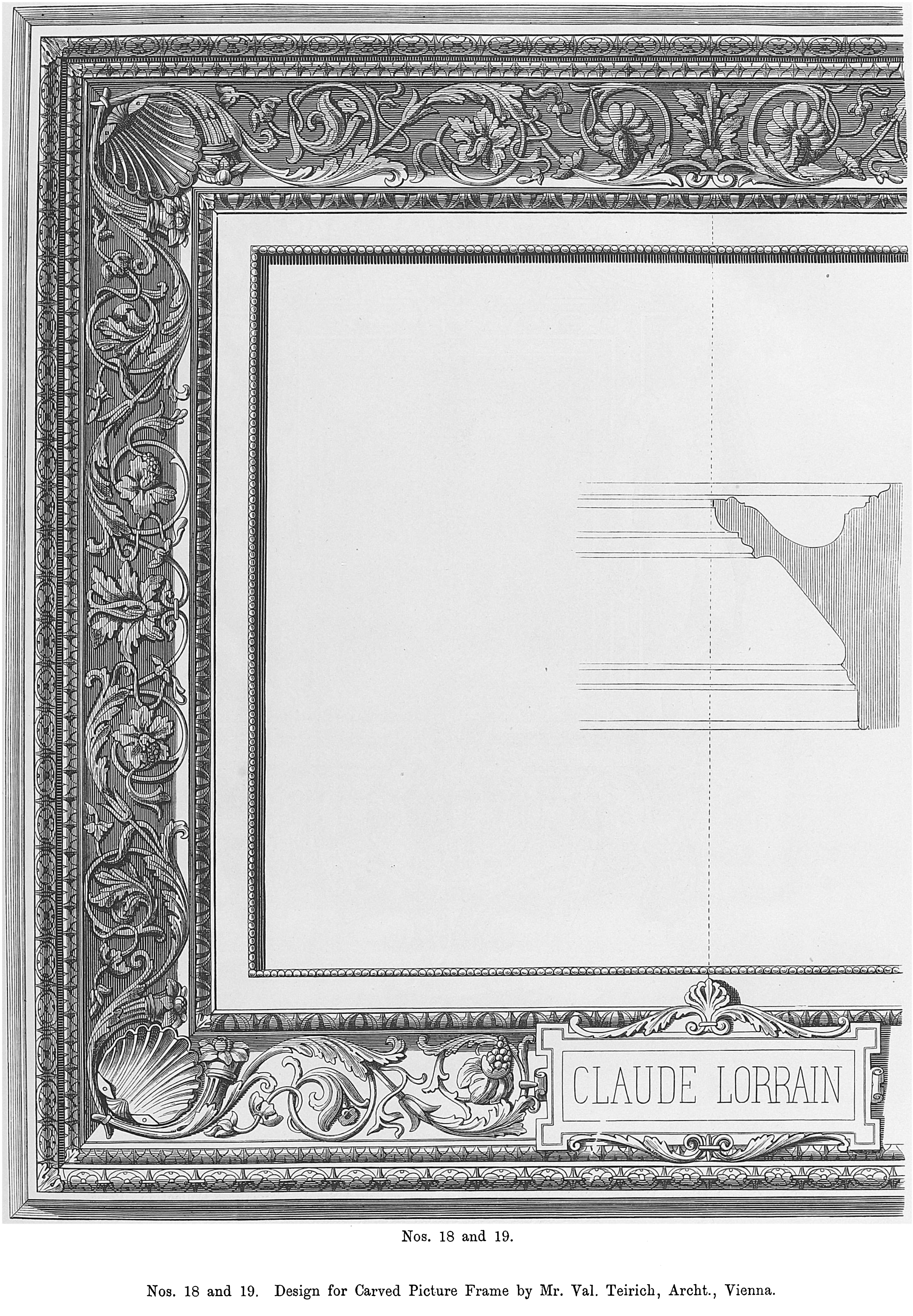


No. 15.

No. 15. Table.
Details No. 2 of Supplement.

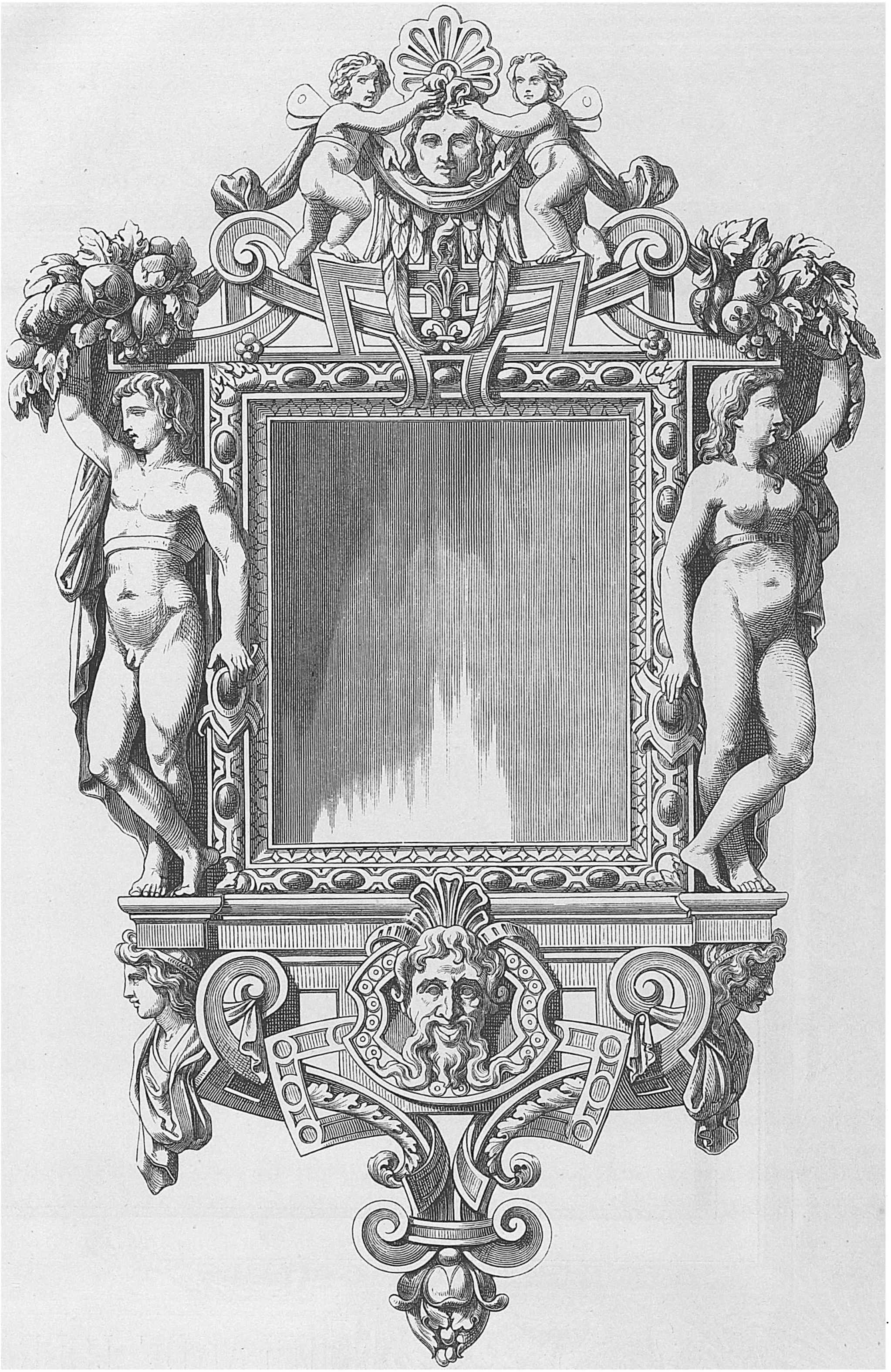


Nos. 16 and 17. Wardrobe, the door filled in with glass belonging to Set of Bed-room Furniture given in Parts 6 and 7 of the "*Workshop*".
Mr. Steffan, Archt., Munich.
Details and ground-plan Nos. 3 and 4 of Supplement.



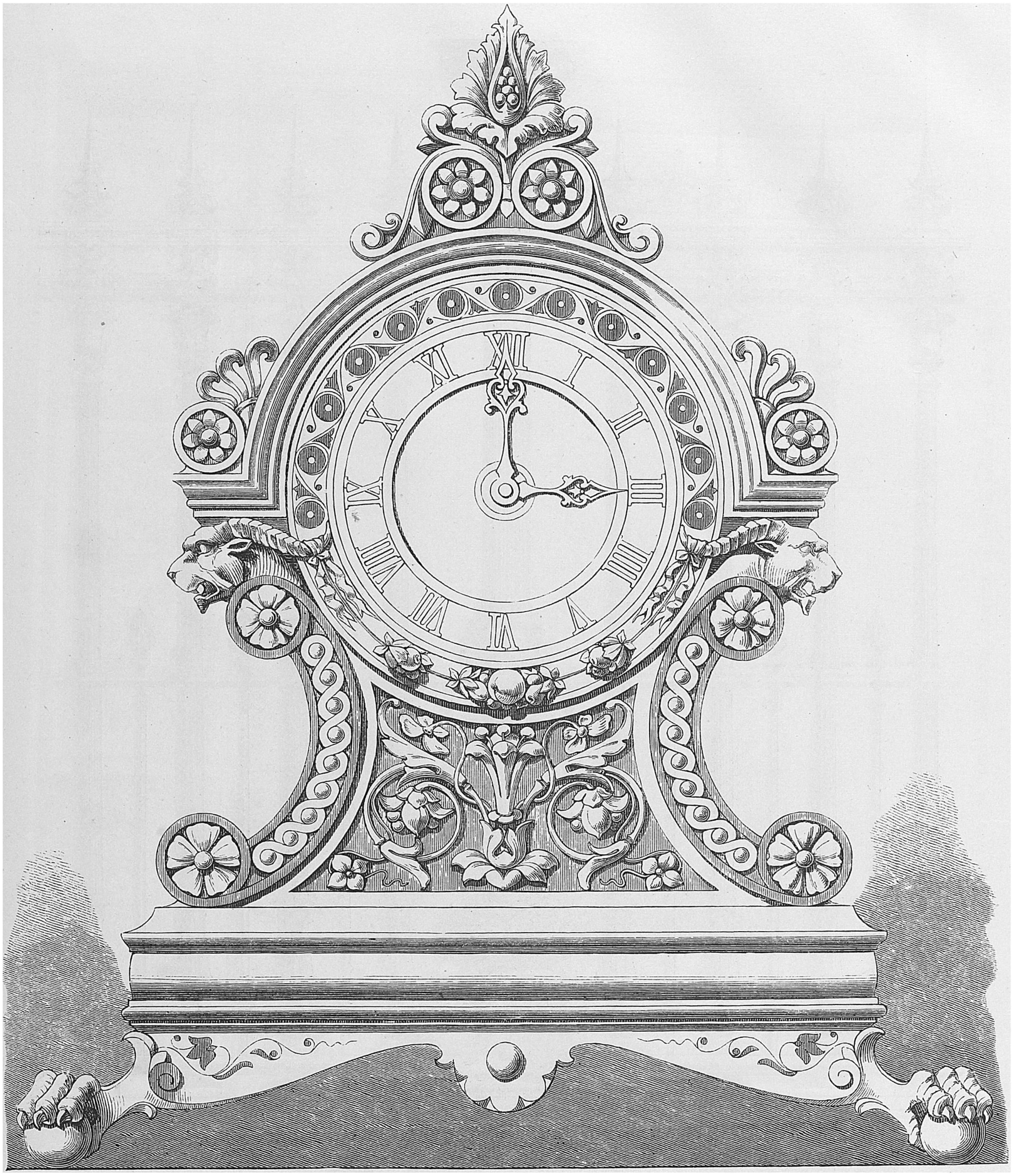
Nos. 18 and 19.

Nos. 18 and 19. Design for Carved Picture Frame by Mr. Val. Teirich, Archt., Vienna.



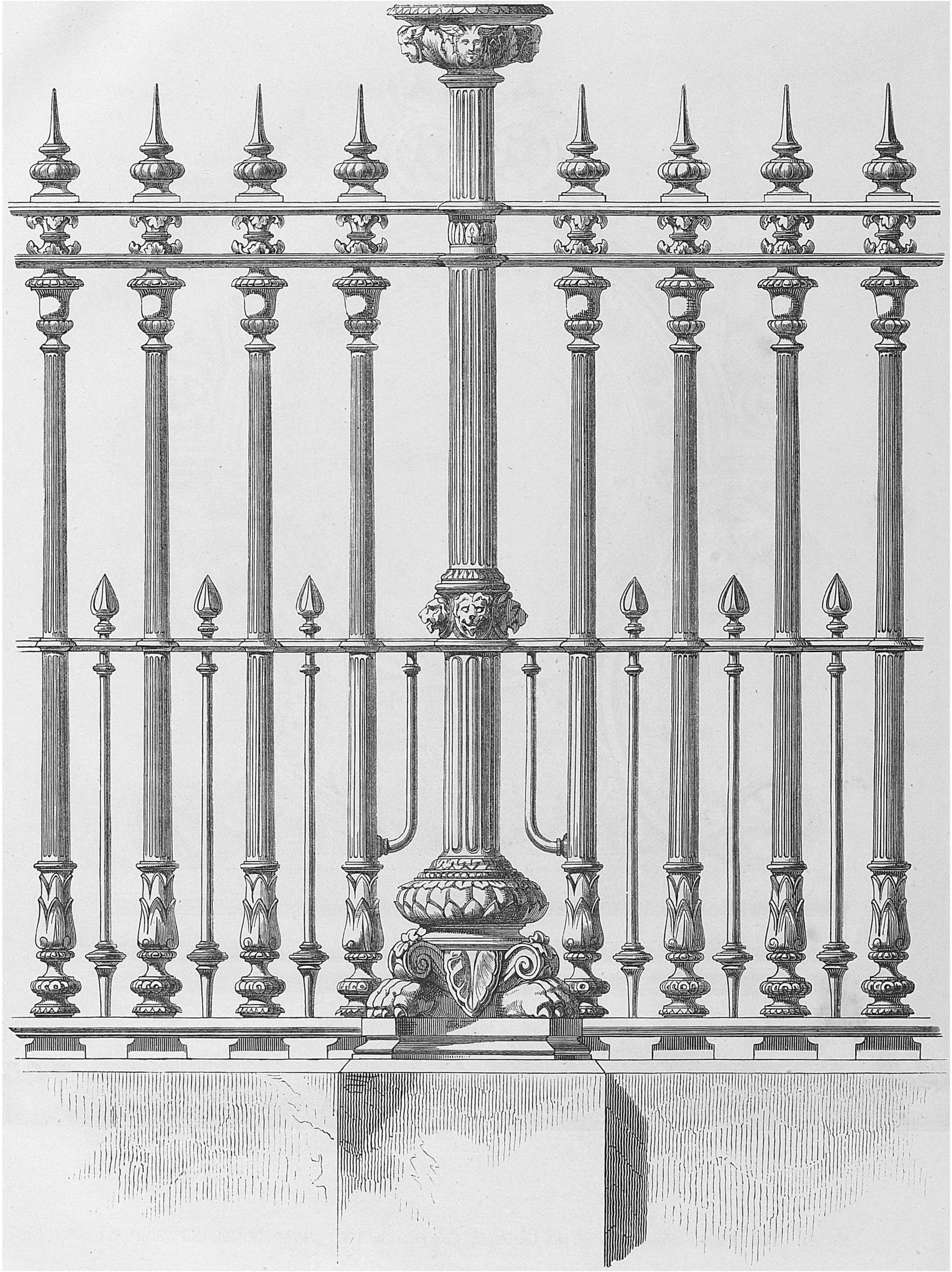
No. 20.

No. 20. Carved Mirror Frame. Style Henri II. Mirror in polished Steel. Sauvageot Collection, Paris. From design of M. Boitte, Archt., Paris.



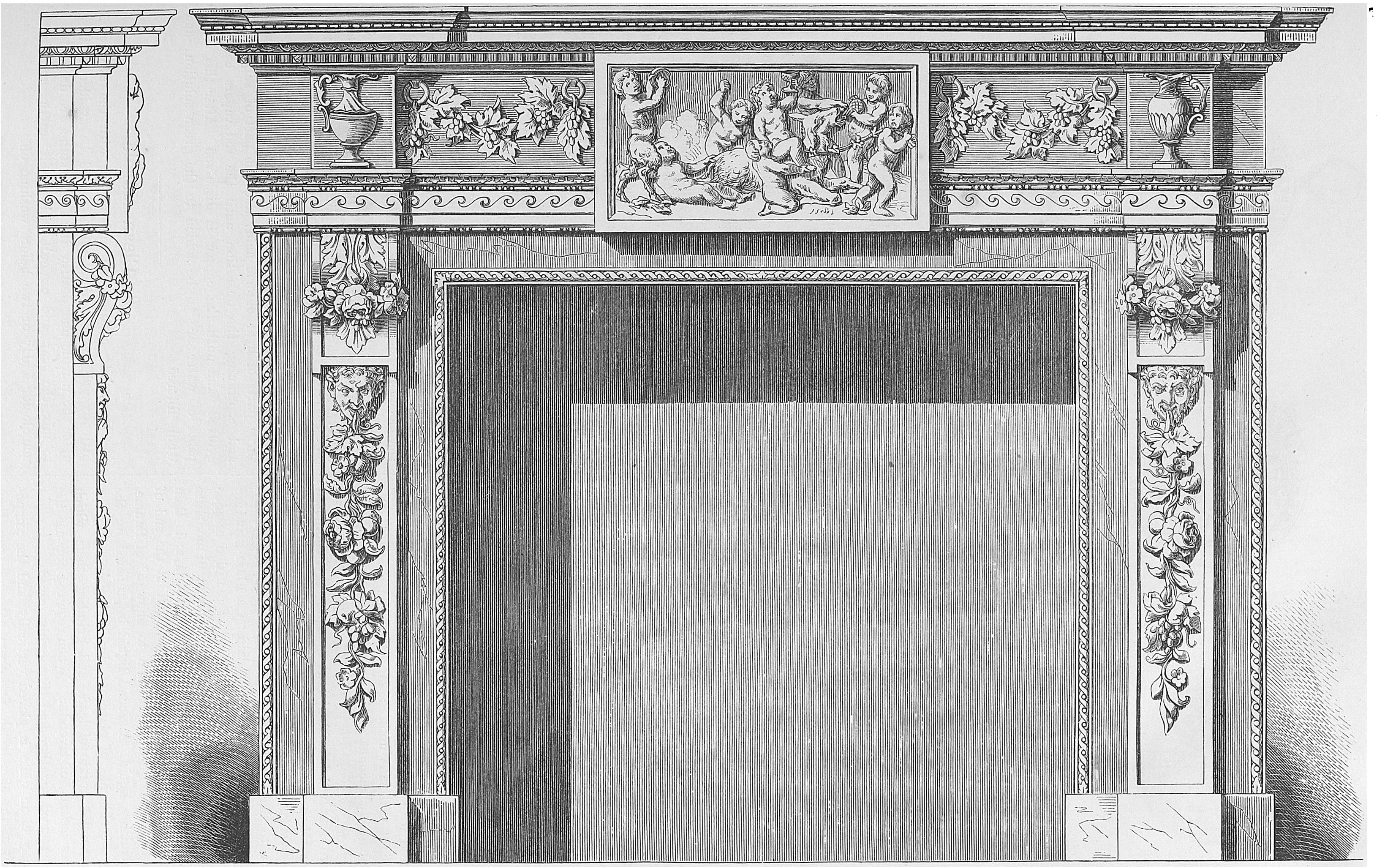
No. 21.

No. 21. Time-Piece. First prize of the Carlsruhe Competition 1869. Prof. W. Bäumer, Stuttgart.



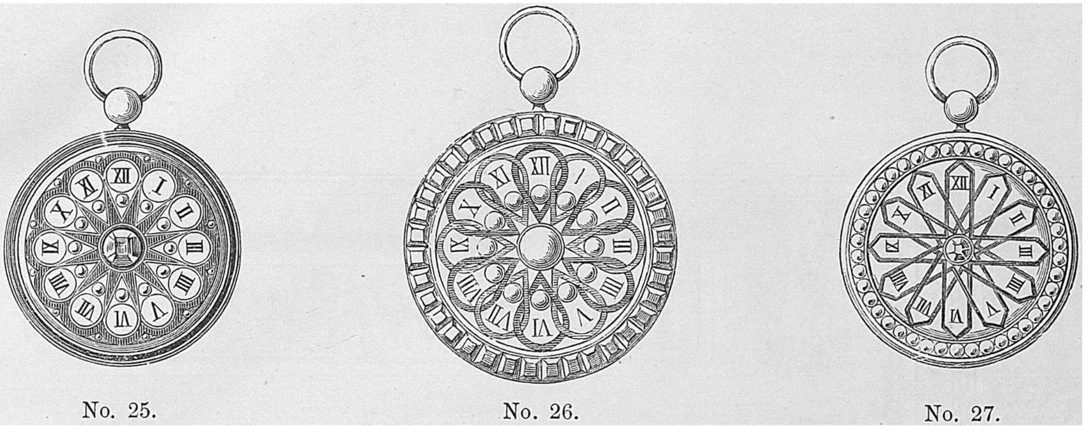
No. 22.

No. 22. Cast-Iron Railings in Front of the British Museum, London.



Nos. 23 and 24.

Nos. 23 and 24. Grand Chimney Piece in Saloon, Arts Club, London, in white, yellow and violet Marble.



No. 25. No. 26. No. 27.

Nos. 25—27. Lids of Watches, enamelled and set with pearls and diamonds; designed and manufactured by M. Falize aîné, Paris.

VARIOUS.

Artificial Caoutchouc.

Artificial caoutchouc, according to Les Mondes, is a chemical compound of gelatine and different substances that produce a homogeneous, elastic body insoluble in volatile mineral and vegetable oils, not attacked by hydrogen gas and offering in consequence many valuable applications in the arts. It could be employed to make pipes for conducting petroleum, benzine, ether, turpentine, also tubes for gas; also moulds for galvanoplastic figures, also as an insulator of electricity, as stopper to bottles, for preservation of eggs, and many other purposes. The price of the article in France is 3 francs the kilo, or 30 cents a pound. Its employment is easy, as it melts in a salt bath, and can be cast in type moulds. After its complete oxydation in the air it becomes more infusible than vulcanized India rubber. Heat and cold have no action upon it. The substance used to render the gelatine insoluble is no doubt chromic acid.

(Journal of Applied Chemistry.)

Platinized Glass.

We have been shown a mirror made by coating glass with platinum in a manner analogous to that pursued in silvering glass. The film is so thin as to be transparent when held up to the light, but when covered with black paper is a perfect mirror, reflecting nearly all the light that falls upon it. Mr. Wideman gives, in the *Scientific American,* an account of the new process for platinizing glass from which we condense the following: 100 grammes of clean platinum foil are dissolved by aid of heat in aqua regia composed of 400 grammes nitric acid, and 1,000 grammes pure hydrochloric acid, and the resulting chloride is evaporated to dryness, care being taken not to decompose it by too high a temperature. It is then crushed in a porcelain mortar and laid on a glass grinding plate, when it is mixed with 1,400 grammes of rectified essence of lavender, added in small quantities at a time at a moderate temperature. The mixture is left to stand for eight days; is then decanted and again left in quiet for six days, and at the end of this time filtered. The liquid ought then to show 5° of Baume. This is the platinizing liquid. A second liquid is prepared for the above quantity of chloride of platinum, by taking 25 grammes litharge, 25 grammes borate of lead, and grinding them which 8 to 10 grammes essence of lavender. When required for use the two liquids are poured together and thoroughly mixed.

The perfectly clean glass is placed vertically, and the composition applied by means of a brush, first from bottom to top, then from left to right, and finally from right to left, so as to give it a perfectly uniform coating. The oily mixture spreads itself instantly over the surface, drying slowly and without running. As soon as the glass plate is sufficiently dry it is placed in muffles, formed of a frame of cast iron, tongued and grooved, and the parts of which slide in each other, and is then heated in furnaces of a peculiar construction. The platinized mirror thus obtained is of great permanency. It resists the action of all atmospheric agencies, and as the reflecting surface is in the front of the glass there is less danger of distortion and an inferior quality of glass can be employed. It is as easy to manufacture curved and round as it is plane mirrors. As the platinized glass is transparent, a person placed in the rear of an office can see everything going on in front of the office without himself being seen. So also at night, when the shutters are closed the windows would become mirrors if coated with platinum in this way. As silver is easily tarnished and platinum is not, the new process will be valuable for all kinds of reflectors. For ghost and shadow pictures, and in philosophical instruments, and in the opthalmescope there would seem to be an extensive application for the platinum mirrors.

Zinc Roofing.

A great objection to the use of zinc as a covering for the roofs of houses, in spite of its cheapness and the ease with which the sheets can be applied, is found in the ready oxydation of the metal during wet weather, as well as in the unpleasant glare proceeding from it in sunlight. Both of these difficulties may, however, be obviated by the application of a certain substance, which gives to it a permanent slate color, and at the same time prevents decomposition. This is prepared by heating a porcelain dish one part, by weight, of copper scales, with a mixture of three parts of hydrochloric acid, and one part of sulphuric acid, and continuing the operation until the red vapors cease to be evolved, and until the copper is dissolved. After this sixty-four parts of water are to be added to the green solution, and the whole filtered.

To Clean Marble.

Use white castile soap and water, with the addition of a little ox gall. Acids of all kinds should be avoided as they act upon the marble and destroy it. If the stains are deep, it is well to mix the soap and ox gall with fullers' earth, and cover the marble for a day or two before washing off.